

The NOAA Strategic Plan

An FY 2002 Overview

For the year 2005, NOAA envisions a world in which societal and economic decisions are coupled strongly with a comprehensive understanding of the environment. Environmental stewardship, assessment and prediction will serve as keystones to enhancing economic prosperity and the quality of life, better protecting lives and property, and strengthening the U.S. balance of trade. This vision depends on actions now that:

- Create and disseminate reliable assessments and predictions of weather, climate, space environment, ocean and living marine resources, nautical, and geodetic phenomena and systems.
- Implement integrated approaches to environmental management and ocean and coastal resources development for economic and social health, protection of essential fish habitat, and recovery of endangered and threatened species of fish and marine mammals.
- Ensure access to continuous operations observing capabilities - from satellites to ships to radars and submersibles.
- Build and use new information networks.
- Develop public-private and international partnerships for the expansion and transfer of environmental knowledge and technologies.
- Invest in scientific research and the development of new technologies to improve current operations and prepare for the future.
- Improve NOAA's abilities to serve its customers and forge stronger ties with its partners and stakeholders.

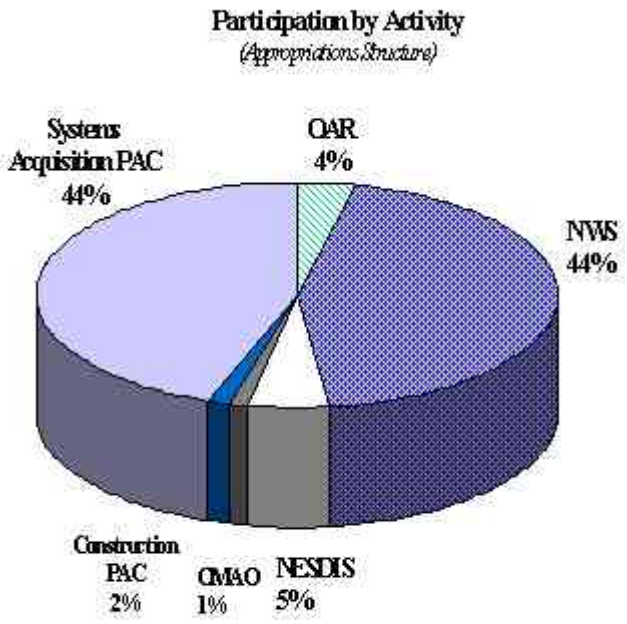
Achieving NOAA's Vision for 2005

- NOAA's Strategic Plan describes the goals and objectives that have been established to fulfill its vision. The strategy consists of seven interrelated goals that are grouped within the two missions of Environmental Assessment and Prediction, and Environmental Stewardship. The execution of NOAA's goal-based strategy depends strongly on a stable and robust infrastructure and administrative and human resources, as well as on the underlying capabilities of the agency as a national resource for research, observing systems, and environmental data and information services.

Advance Short-Term Warning and Forecast Services

Total Request: $1,474,441,000

Vision - NOAA's vision for 2005 is to provide significantly improved short-term warning and forecast products and services that enhance public safety and economic productivity to the Nation. NOAA will enhance its ability to observe, understand, and model the environment, and effectively disseminate products and services to users.



Challenge - Our environment has profound effects on human welfare and economic well being. Each year, hundreds of lives and billions of dollars are lost due to severe storms, floods and other natural events that can be predicted minutes to months in advance. NOAA's current ability to predict short-term change is restricted by observations that are incomplete in time and space. This limits the ability to improve basic understanding, and predictive modeling of weather and other natural phenomena. NOAA is committed to improving its observing systems, developing a better understanding of natural processes, and enhancing its predictive models and dissemination systems.

Implementation Strategy - The objectives of this goal are to:

- Sustain modernized weather service operations
- Maintain continuous operational satellite coverage critical for warnings and forecasts
- Strengthen observing and prediction systems
- Improve customer service to the public, emergency managers, the media, and private forecasters.

Benefits - Increasing our understanding of the environment through research and investing in new technologies will provide more accurate and timely weather warnings and forecasts required by the Nation. Improved geomagnetic forecasts will increase efficiencies for satellite operations and communications and electronic power distribution networks. Advanced modeling techniques and more complete observations will reduce uncertainties in hurricane track prediction, saving millions of dollars, and will improve inland flood prediction, saving lives and property. Accurate outlooks of future conditions will provide better information for planning weather sensitive activities over land and ocean. Critical contributions for the Natural Disaster Reduction Initiative will be provided from the research, monitoring and operational program in this NOAA goal.

Improvements associated with the modernized weather services have allowed for huge dividends. A cost-benefit analysis by the National Institute of Standards and Technology estimated economic benefits to the Nation to be about eight times greater than the costs involved. The Nation should realize annual benefits approaching $7 billion from the modernization. It is now time to take full advantage of the modernization.

FY 2000 Accomplishments - The Nation continued to benefit from the NWS $4.5 billion modernization efforts, with improved and exemplary weather forecasting and warning services being provided around the Nation in FY 2000.

Provided Exemplary Services in the February Georgia Tornadoes: During February, NOAA provided tornado warnings from 33 - 59 minutes (three to six times faster than the average tornado warning) for residents in Georgia, enabling citizens to get out of harm's way. The NOAA Weather Radio's tone alert feature was credited with waking people up providing time for them to seek safe shelter.

Provided Support to Wildfires in Southwest and Western U. S.: During the Spring and Summer, NOAA had 14 Incident Meteorologists (IMETS) on site to assist other federal agencies with an increasing number of wildfires. Through July, the National Weather Service (NWS) dispatched IMETS to work the equivalent of 550 days on wildfires. Over 60,000 wildfires have burned nearly 3.5 million acres this year, making this the worst fire season in 30 years.

Unveiled "StormReady" Program: NWS designed a program to help cities, counties, and towns implement procedures to reduce the impact of natural weather disasters. "StormReady" provides clear recommendations for communities to improve their warning and preparedness for hazardous weather operations. Local communities are certified as "Strom Ready" for their jurisdiction by meeting criteria established by the NWS in partnership with federal, state and local emergency management professionals.

Launched Geostationary Operational Environmental Satellite, GOES - L: During May, NOAA launched its newest satellite, GOES - L. GOES satellites are vital to weather forecasting in the U.S. and aide weather forecasters in providing better warnings of severe weather.

- *Launched Polar Orbiting operational Environmental Satellite, NOAA-L*: In September, NOAA launched the second satellite of its newest advanced series of polar-orbiting satellites. This satellite places the second set of advanced microwave instruments in orbit to allow for improved daily global sensing of atmospheric weather and climate parameters in cloudy regions.

  Provided New Weather Products: In response to customer and partner needs, NOAA extended its precipitation guidance products from two to three days and developed a probabilistic winter weather guidance product for snow and ice.

  Installed the new IBM SP SuperComputer: In FY 2000, NOAA installed the new IBM SP SuperComputer and transferred over 126,000 products to the new system.

  Released Public Service Announcement Warning Against Driving Through Flooded Areas: The National Association for Stock Car Auto Racing's Darrell Waltrip and NOAA's NWS teamed up to provide a new public service announcement warning of the dangers of driving on flooded roadways. Floods are responsible for more deaths each year than any other weather-related phenomena, and of these fatalities, about half (more than 50 annually) are caused when people try to drive through flooded roadways.

- *Completed Severe Thunderstorm Electrification and Precipitation Studies (STEPS) Field Program:* From May through July, NOAA scientists joined researchers from about a dozen organizations to study thunderstorms and lightning in the High Plains, with the goal of improving severe weather forecasts. Supercell thunderstorms are considered to be the most dangerous type of storm due to the extreme weather generated, including tornadoes, large hail and flooding.

Key FY 2002 Activities

- Sustain NWS modernized operations
- Provide an adequate preventative and cyclical facilities maintenance program
- Provide operation and maintenance support for 152 fielded Advanced Weather Interactive Processing Systems (AWIPS)
- Continue AWIPS Build 5.0 development activities (3rd year of 3 year effort)
- Continue NEXRAD and ASOS planned product improvement initiatives
- Make final lease payment on the Class VIII supercomputer
- Provide critical infrastructure protection for the NWS Telecommunication Gateway, a critical link in the national and international infrastructure that collects and distributes weather data
- Continue the radiosonde replacement program to ensure critical upper air data
- Continue the procurement, launching, and operation of polar orbiting satellites and the follow-on series of geostationary weather satellites
- Conduct required data assimilation and numerical modeling activities which are vital to the NWS

forecast process

- Continue the national implementation of the Advanced Hydrologic Prediction Service (AHPS) in the Upper Midwest and tributaries within the upper Ohio River Basin
- Perform research to improve the forecast accuracy and lead-time for hurricane tracking and landfall prediction through assessments, analysis of enhanced data sets, and simulations.
- Support the multi-year procurement of spacecraft, launches and associated ground system changes from the current series NOAA K-N of polar-orbiting satellite System (NPOESS), and the Geostationary Operational Environmental Satellite (GOES).
- Establish a Joint Center for Satellite Data Assimilation to accelerate the use of satellite data in numerical weather prediction models.

Key Performance Measures

	1997 act.	1998 act.	1999 act.	2000 act.	2001 est.	2002 est.
Tornado Warnings						
Lead Time (minutes)	10	11	12	10	13	13
Accuracy (percent)	59	66	70	63*	68**	70**
* False Alarm Rate (percent)			72	76*	73**	70**
Flash Flood Warnings						
Lead Time (minutes)	45	52	41	43	45	48
Accuracy (percent)	82	85	83	86	86	86
Winter Storm Warnings						
* Lead Time (hours)			11	9	13	14
* Accuracy (percent)			85	85	86	87
Hurricane Warnings						
* Lead Time (hours)			19	N/A	21	22
Aviation Forecasts (Ceiling/Visibility)						
* Accuracy (percent)			19	15	21	23
* False Alarm Rate (percent)			52	53*	51**	47**
Marine Forecasts (Wind/Wave)						
* Accuracy (percent)			50	50	53	55
Precipitation Forecasts						
* Accuracy of 3-day Forecast (percent)				16	22	24
* Represents new measures						

N/A - represents no landfalling hurricanes in 2000

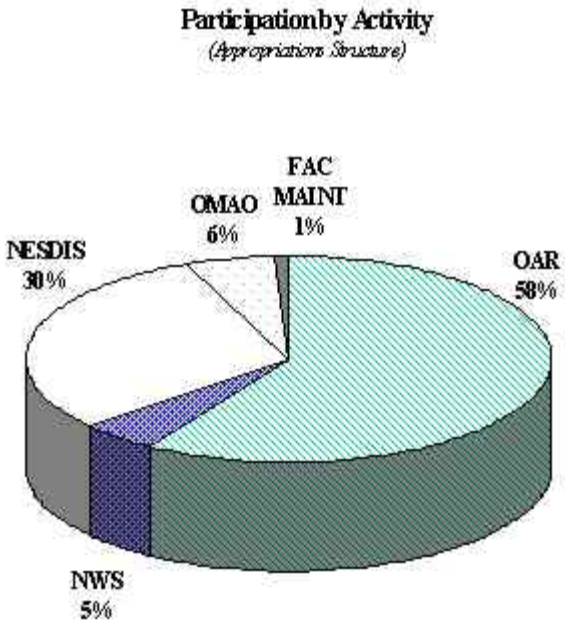
* FY 2000 Actual performance measures modified due to additional verification and quality control procedures in February, 2001.

** FY 2001 and 2002 Performance measures modified based on actual performance in FY 2000.

The NOAA Ship KA'IMIMOANA deploying weather buoys in the Pacific.

Implement Seasonal to Interannual Climate Forecast

Total Request: $142,206,000



Vision - NOAA, working together with academic and multinational partners, will provide forecasts of global climate variability with lead-times of one-year and longer, focusing on the effects of El Niño.

Challenge - The largest predictable interannual climate variations are caused by the El Niño-Southern Oscillation (ENSO) phenomenon in the Pacific Ocean. ENSO causes changes in temperature and precipitation pattems, in ocean circulation, and in storm frequency. These changes have global effects. NOAA issues monthly and seasonal probability outlooks for temperature and rainfall based on the application of ENSO research and has successfully forecast the 1997-1998 El Niño six months in advance. ENSO-related effects range from severe drought to intense storms. The ability to improve the accuracy and reliability of multi-season forecasts requires the incorporation of the effects of other longer term modes of climate variability such as the North Atlantic Oscillation and the Pacific Decadal Oscillation, into improved models. The impact of global

change on short-term climate variability must also be understood. This requires better understanding of climate process and can only be achieved with an enhanced global observing system. NOAA must develop an expanded suite of operational products which predict changes on one week to multi-season time scales.

Implementation Strategy - Key issues for the public and decision makers are: (1) the monitoring, description, and dissemination of current state of climate; (2) understanding of unusual or extreme climate conditions; and (3) predictions of important climate variables on time scales from a few weeks to more than a year.

The objectives of this goal are to:

- implement climate prediction systems to deliver useful seasonal to interannual climate forecasts for the U.S. and collaborate in a multinational effort to generate and use similar forecasts;

- enhance global observing and data systems required for the improvement of model predictions of seasonal to interannual climate variations;

- invest in process and modeling research to improve predictability of temperature and rainfall distributions; and

- assess the human and economic impacts of climate variability and improve public understanding of climate forecasts.

Benefits - We can now predict El Niño events with sufficient accuracy and lead time that savings of hundreds of millions of dollars a year can be realized in the both the National and global economies. Climate services will be as important economically in the 21st Century as weather forecasting is today. Improved climate forecasting will benefit producers and consumers in many sectors by improving decision making. A cost-benefit analysis of one ENSO research effort, the Tropical Ocean Global Atmosphere (TOGA) program, shows return on investment of at least 13% - 26% for U.S. agriculture. Agricultural savings of more than $300 million annually are estimated to result from further forecast improvements. These forecasts will also improve management of fisheries, water resources, and other sectors and resources sensitive to weather and climate variations.

FY 2000 Accomplishments

The Seasonal to Interannual Climate team made strides in forecasting, outreach, research, and observations. The major FY 2000 accomplishments are described below.

Forecasting Accomplishments:

- Achieved record high skill scores for temperature in outlooks for May 2000 and March-April-May 2000.

- Forecast the 1998-1999 La Niña six months in advance; correctly predicted cooler-than-normal sea surface temperatures in the eastern Pacific Ocean; successfully predicted the continuation of La Niña through the winter of 1999-2000; and achieved exceptional skill scores for the third straight year.

Operationalized four new, significant forecast products:

- U.S. Threats Assessment: a weekly outlook for droughts, heat waves, heavy precipitation, wild fires, and other extreme events on time scales from 3 to 14 days.
- U.S. Drought Monitor: an estimate of current drought conditions
- Seasonal U.S. Drought Outlooks: which predict seasonal drought conditions.
- Excessive Heat Outlook products

Outreach Accomplishments:

- Established an administrative focus for climate services at the NWS to forge and maintain links between NOAA's offices involved in seasonal to interannual climate predictions, other federal agencies, Regional Climate Centers, local officials and private customers. The new office, within the Climate Services Division of the NWS, is also responsible for climate policy and constituent requirements for the NWS.

- Began formulating a climate services training program for NWS field personnel to ensure that field offices can adequately respond to customer inquiries.

- Completed major overhaul of the Climate Prediction Center's (CPC) web site to include improved links, complete indices, and most popular products list.

- The American Society of Civil Engineers published the book "Using Meteorology Forecasts in Operational Hydrology" which explains how NOAA's short term and seasonal forecasts can be used for water resource management.

Observational and Research Accomplishments:

- Successfully implemented the Climate Database Modernization Program (CDMP) established to ensure valuable climatic data and information would be available to the public, researchers, and economic and political decision makers.

- Demonstrated a ship-borne wind profiler for continuous monitoring of ocean winds as well as dual-wavelength profilers to identify the nature of precipitating systems.

- Developed the Flexible Modeling System. This product and the Diagnostic Web-Atlas tools provide researchers with capabilities to support a wide range of applications.

- Implemented a five year study, Eastern Pacific Investigations of Climate (EPIC), designed to improve understanding of key features in the Eastern Pacific.

- Demonstrated a statistical link between sea surface temperature anomalies during the fall season and the Madden-Julian Oscillation (MJO) activity during the subsequent winter.

- Instituted the Satellite Active Archive which has made over 7 terabytes of polar-orbiting satellite data available to the environmental research community each year.

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Key FY 2002 Activities

Future plans include an integrated suite of forecast products to provide regionally specific weather and climate information for time scales ranging from hours to days to weeks to seasons to years. We will enhance short-term warning forecasts and predictions of decadal-to-centennial change by working with other NOAA climate researchers. These forecasts will provide longer lead times for warnings about extreme weather events. We will extend weather and climate predictions to cover periods ranging from one week to several seasons.

Specific FY 2002 activities to include:

- Continue to translate the improved understanding of climate variability resulting from enhanced climate monitoring capabilities into better models.
- Maintain and improve data delivery systems to serve the rapidly increasing demands for new climate services.
- Improve the availability of climate reference data sets that are now widely used by the operational and research climate community.
- Establish and maintain the sustained global observing system necessary for climate research and forecasting as well as the long-term monitoring system necessary for climate change detection and attribution.
- Ensure the continuity of the current U.S. (NASA) and French satellite altimetry programs, TOPEX and JASON, through the next decade.
- Conduct El Niño - Southern Oscillation (ENSO) research.
- Improve access to NOAA climate data holdings for the public and decision makers.

Key Performance Measures

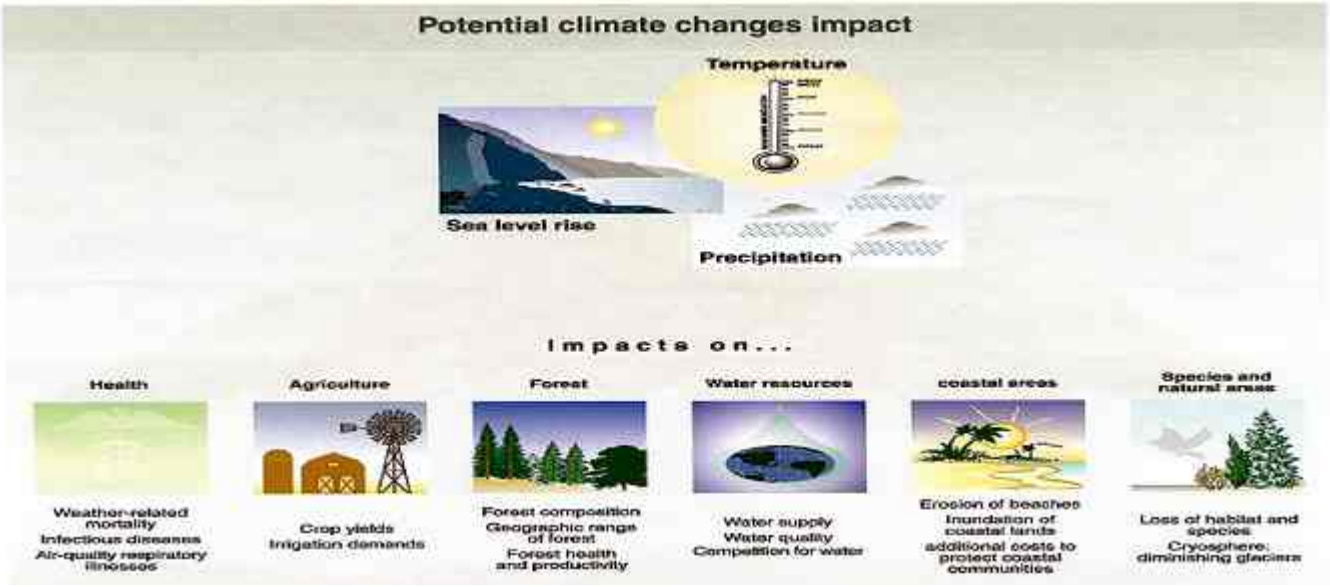
	1997 act.	1998 act.	1999 act.	2000 act.	2001 est.	2002 est.
ENSO Forecasts accuracy (correlation) 1/	.81	.85	.85	.84	.85	.85
U.S. Temperature skill score 2/	22	23	24	25	20	26
Number of new monitoring or forecast products that become operational per year 3/	N/A	N/A	N/A	N/A	4	4
New climate observations introduced 4/	N/A	N/A	N/A	N/A	120	150

1/ Accuracy is the correlation of the forecast with actual conditions.

2/ For those areas of the United States where a temperature forecast (i.e., warmer than normal, cooler than normal, normal) is made, this score measures how much better the prediction is than the random chance of being correct. Skill score is based on a scale of -50 to +100. If forecasters match what would be predicted by random chance, the skill score is 0. Anything above 0 shows positive skill in forecasting. Given the difficulty of making advance temperature and precipitation forecasts for specific locations, a skill score of 20 is considered quite good and means the forecast was correct in almost 50 percent of the locations forecasted. Forecasts will likely be better in El Niño years than in non-El Niño years.

3/ New performance measure added for FY 2001. Reflects customer service goal of the SI team.

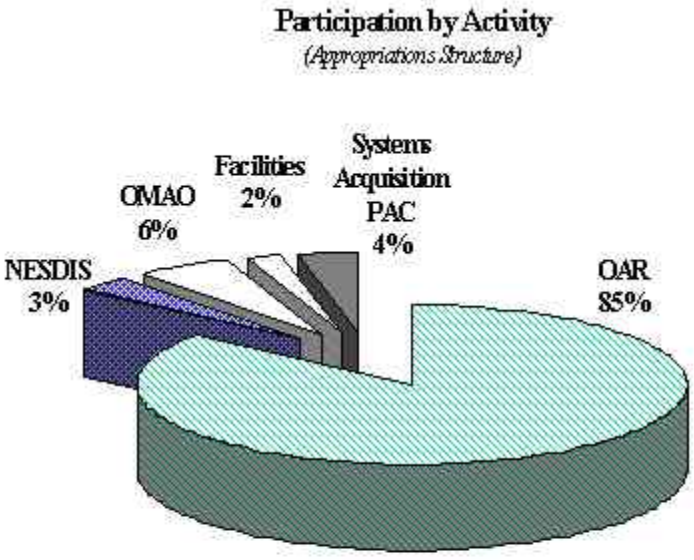
4/ New performance measures added for FY 2002. Reflects the goal of the SI team to increase the density of global climate observations to improve short-term to longer-term forecasting and assist in research and modeling.



Predict and Assess Decadal to Centennial Climate Change

Total Request: $101,584,000

Vision - NOAA and its research partners will provide science-based information for improving the predictive understanding and impacts of decadal-to-centennial changes in the global environment, specifically for: long-term climate change and greenhouse warming, ozone layer depletion, and air quality improvement.



Challenge - Our planet is a place of natural and human-induced change. Human activities are now recognized as impacting the global heat balance and climate system, thinning of the stratospheric ozone layer, and atmospheric pollution. While these changes increasingly promise to impact our

societal systems and natural environments, they challenge the world scientific community to improve its prediction and assessment capabilities. Explanatory environmental models must be strengthened through better understanding of the atmospheric and oceanic processes so that we may meet the challenges of understanding and foreseeing climate variability and long-term change in approaching decades. Sound economic and social decisions depend upon assessed scientific information as a touchstone.

Implementation Strategy - The objectives of this goal are:

- to characterize the agents and processes that force decadal to centennial climate change;
- understand the role of the ocean as a reservoir of both heat and carbon dioxide to address a major source of uncertainty in climate models;
- ensure a long-term climate record by enhancing domestic and international weather networks, observing procedures, and information management systems. Document present and past changes and variations in the climate system, including extreme events, and rapid climate changes, exploiting national and international observing networks, satellites, and paleoclimatic data;
- guide the rehabilitation of the ozone layer by providing the scientific basis for policy choices associate with ozone-depleting compounds and their replacements;
- provide the scientific basis for improved air quality by improving the understanding of high surface ozone episodes in rural areas and by strengthening the monitoring network to detect cleaner air quality and improving the characterization of airborne fine particles; and
- develop models for the prediction of long-term climate change (including extreme events and rapid climate changes), carry out scientific assessments, and provide human and biophysical impacts information.

Benefits - Nations have committed to eliminating production of compounds that deplete the ozone layer. Research is not only helping define "ozone-friendly" replacement compounds and monitoring the atmospheric decline in ozone-depleting substances, but also documenting that the recovery of the ozone layer is as expected. Anticipatory research on global climate change supports sustainable development by providing timely information to society to make sound decisions about the role of human activities in global climate change and variability. NOAA research has identified areas of air quality changes, such as high surface ozone in rural areas, that require the development of a fundamental understanding of their causes. New research is pointing to more effective ways to meet those goals, thereby avoiding costly over-regulation. Providing research results that address key scientific uncertainties, presenting the improvements in understanding in up-to-date assessments, and summarizing this knowledge in policy-relevant terms to government and industrial leaders are the cornerstones of environmental stewardship.

FY 2000 Accomplishments

NOAA has recognized that a sustained, multi-dimensional program of research is required to understand and monitor the long-term processes and status of the Earth's atmosphere. On-going research involves monitoring and understanding natural and anthropogenic aerosols and greenhouse gases, stratospheric ozone depletion, background atmospheric constituent composition, and reconstructing past climates through the use of historical measurements and paleoclimate data. In FY 2000, NOAA's research documented trends in atmospheric trace gases related to climate, air quality, and the ozone layer (e.g., methane, halocarbons, nitrous oxide, ozone), and analyzed trends in climate-related parameters such as the frequency of heat extremes. The climate-related properties of atmospheric aerosols were elucidated in studies over ocean and land surfaces. FY 2000 research also advanced understanding of the role of the oceans and land surface in the atmosphere's carbon cycle, information that is key to improved model predictions of future climate. A major study of the chemical processes that influence ozone destruction in high latitudes of the northern hemisphere was conducted in FY 2000. In collaboration with university, government and international partners, NOAA continues to provide the scientific basis for sound, science-based information supporting decisions relevant to issues regarding decadal to centennial change. In FY 2000, NOAA played leading roles in assessing the understanding of climate and climate change, as well as ozone pollution. These achievements are realized largely through the efforts of the Office of Oceanic and Atmospheric Research, the National Environmental Satellite, Data, and Information Service, and the National Weather Service.

Key FY 2002 Activities

- Continue to advance understanding of the natural and human-influenced processes affecting the earth's radiation balance with an emphasis on observations of the coupled ocean-atmosphere system, especially as it relates to the cycle of carbon dioxide, utilization of observations, and assessments of the current understanding that serve as input to public policy formulation.

- Continue the development of a climate reference network; NOAA will continue to place instruments that measure temperature, precipitation, and soil moisture at a number of reference network sites and to implement a means to electronically communicate all data collected in the reference network.

- Continue improving the ways observations and models are used to study and predict the effects of climate changes on a regional scale within the US.

- Continue the improvement of observation systems and extend the capability of models to develop the ability to predict the effects of natural climate cycles with time scales longer El Nino Southern Oscillation (ENSO).

- Further the understanding of the role of the ocean in the climate system by continuing the deployment of the ARGO float network, ongoing field measurement programs and special targeted studies, and refinement of remote sensing capabilities to better understand the role of the ocean in the climate system.

- Advance the understanding of the role of natural and human influenced emissions, including aerosols, in altering the radiation balance of the earth by enhancing ongoing monitoring programs and conducting new field measurement programs.

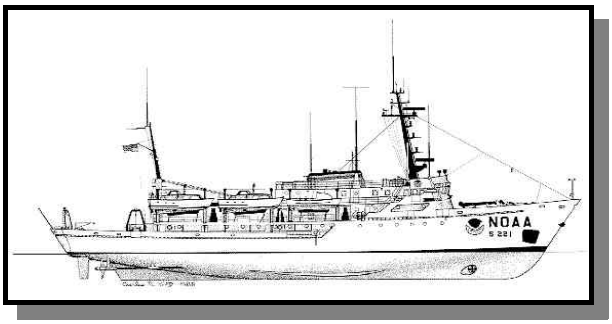
- Continue the ongoing archival and analysis of climate data to assess current and future impacts and to provide critical data and services to other Federal Agencies, state and local government, private commercial groups, and the public.

- Continue monitoring the recovery of the stratospheric ozone layer

Key Performance Measures

The scientific community has in place a regular process for evaluating, on a several-year time scale, the major scientific advances in climate science. This process is the periodic assessment of the state of scientific understanding of the climate system. NOAA's measure of performance is that 90% of the research in relevant areas of endeavor be incorporated into these assessments, namely, the vast majority of NOAA's results are deemed by our scientific peers to be major advances in understanding. Three to five years is the period generally used to expect substantial overall advancements in a field such that a new state-of-understanding assessment could be justified. Those products take 2 ½- to 3-years to produce.

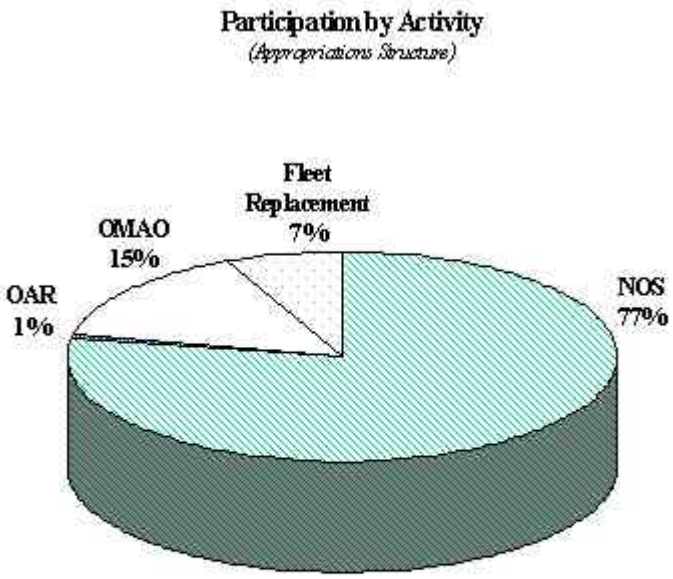
Performance Measure	1998 act.	1999 act.	2000 act.	2001 est.	2002 est.
Document the "turnover" of CFC source gases in order to verify the effectiveness of global policy action	N/A	1	N/A	N/A	1
Publish updated trend results of air quality measurements	N/A	1	N/A	1	N/A
Lead development of a peer reviewed initial assessment of regional ozone in North America, including summarizing results for customers	N/A	1	N/A	N/A	N/A
Results of 90% of the research activities cited in the 2001 IPCC third Assessment of Climate Change	N/A	N/A	N/A	90% cited	N/A
Results of 90% of the research activities cited in the 2002 Scientific Assessment of Stratospheric ozone depletion.	N/A	90% cited	N/A	N/A	90% cited
Results of 90% of the research activities cited in the 2000 US National assessment of the Potential Consequences of Climate Variability and Change	N/A	N/A	N/A	90% cited	N/A



The NOAA Ship RAINIER conducts hydrographic surveys used for nautical charting.

Promote Safe Navigation

Total Request: $137,069,000



Mission - By 2005, merchant ships, fishing vessels and recreational boats will safely ply our coastal waters, electronically guided by space-based navigation and advanced information technologies. NOAA will revolutionize U.S. marine navigation, mapping and surveying and assist commercial shipping in moving increased cargoes safely and efficiently into and out of the Nation's ports and harbors. NOAA will provide a precise satellite derived reference system as the basis for the Nation's nautical data and geographical positioning needs.

Challenge - Ships have doubled in length, width and draft in the last 50 years and seagoing commerce has tripled, leading to increased risk in the Nation's ports. With 3500 commercial shipping accidents annually, the potential for serious injury to lives, property and the environment is compounded by the fact that over half the cargo transported is oil or hazardous material. The total volume of maritime trade will more than double by the year 2020, posing a significant challenge to the aging infrastructure of the U.S. Marine Transportation System (MTS).

NOAA's navigation services are a key component of the MTS, but more than 50 percent of NOAA's nautical charting data were obtained before 1940. One-third of the National Shoreline, for which NOAA is responsible, has yet to be mapped. Two-thirds of the data used for tidal predictions are more than 40 years old, and the physical plant of water level measurement stations is in decline. Finally, the existing coordinate reference system must be modernized to provide the higher accuracy and accessibility available from the Global Positioning System (GPS). In recent years, dramatic improvements in efficiency and accuracy have been realized in the technology used to collect data, and NOAA is capitalizing on these technologies and partnerships to address its MTS infrastructure responsibilities.

Implementation Strategy - The objectives of the Promote Safe Navigation goal are to:

- build, maintain, and deliver a digital nautical charting database to underpin new electronic navigation systems which integrate satellite positioning, tidal heights and currents, radar and sonar, and navigational aids;

- update nautical surveys of the Nation's coastal areas using full-bottom coverage technologies;

- define the national shoreline in an accurate and consistent manner using state of the art technology to serve the Nation's navigational and coastal needs;

- provide mariners with real-time observations and forecasts of water levels, tides and currents, and weather conditions in ports; and

- continue to evolve the National Spatial Reference System to anticipate and fulfill the growing demands for more accurate and timely positioning services critical to digital mapping, charting, and surveying.

Benefits - New technology, including full-bottom nautical surveys, digital charting, satellite positioning (GPS) and real-time observations of tides and currents promise to reduce maritime transportation risks, enhance environmental protection and heighten the competitiveness of the U.S. shipping industry. With today's deep-draft container ships, each additional inch of clearance translates into tens of thousands of dollars in additional cargo trade in or out of the United States. Development of real-time environmental and prediction systems will provide important data where users request it. Location, ship dynamics, and precise depth data will alert mariners to potential accidents and will bolster navigational safety and efficiency. In the years ahead, NOAA will continue to streamline its process of collecting and processing data and delivering charts to the maritime community. Particular emphasis will be placed on improving the delivery of electronic formats. By positioning products and processes for the decades ahead, NOAA will continue to ensure that the Nation's maritime commerce remains safe, efficient, competitive, and responsive to customer requirements. NOAA's nautical data will also support the needs of coastal zone planners, regulatory officials and researchers as they work to ensure the safe, sustainable and efficient development of our coastal and ocean resources.

FY 2000 Accomplishments

NOAA's National Ocean Service (NOS) produced 225 new editions of nautical charts and 65 electronic navigational charts (ENC) of major harbor areas; acquired and processed data from 61 in-house hydrographic surveys; accepted 20 contract surveys; and reduced the hydrographic survey backlog to approximately 32,500 square nautical miles. The National Spatial Reference System, which provides the basic positional framework for the Nation's spatial data infrastructure, now has 100% of its Federal Base Network geodetic control stations with 2 centimeter horizontal accuracy (20 stations added), and 65% with better than 5 centimeter accuracy (145 stations added); in addition, 22 more National Continuously Operating Reference Stations (CORS) came on line in FY 2000, providing 86% of the Nation with coverage within 200 km of a single National CORS. As part of the Height Modernization Effort 13 stations in the National CORS network were provided with North American Vertical Datum 1988 (NAVD 88) heights with better than 5 centimeter accuracy. These advances are accomplished primarily through the NOS mapping, charting, geodesy, and observation and prediction subactivities.

Key FY 2002 Activities

- Produce 250 new editions of nautical charts and an additional 65 electronic navigational charts for a total of 200 ENC's.
- Map another 20 percent of the shoreline depiction backlog in the 40 critical high priority ports.
- Reduce the critical hydrographic survey backlog by an additional 3.5 %.
- Integrate NOAA's navigation-related tools through the National Spatial Reference System to deliver more accurate and timely 3-dimensional positioning capability.
- Improve the operational capacity of the 172 National Water Level Observation Network stations and develop real time capabilities in support of Physical Oceanographic Real-Time Systems (PORTS) for navigation and coastal resource management.
- Implement the comprehensive quality assurance capabilities and modernization necessary to support additional PORTS.

Key Performance Measures

	1997 act.	1998 act.	1999 act.	2000 act.	2001 est.	2002 est.
Nautical chart editions (suite of 1000) Lithographic/Altemative Methods[A]	338	360	250	225	250	250
Electronic Navigational Charts (ENC) cumulative[B]	N/A	N/A	37	65	135	200
Reduce critical area survey backlog (43,000 SNM backlog) Cumulative reduction (%)[C]	12	15.5	20.7	24.3	27.9	31.4
National Water Level Observation Network (NWLON) Cumulative % modernized[D]	78	75	91	93	100	100
National Spatial Reference System (NSRS) Cumulative % complete[E]	60	69	58	71	75	80

A. This Performance Measure replaced the Percentage of Chart Suite Printed. The FY2001 target for 200 charts is to have these charts ready for printing if and when requested.

B. This performance measure replaces the "Cumulative % of Vector Charts Collected" with "ENC Vector Charts Collected, Maintained and Released (cumulative)."

C. A one-time change in accounting caused cumulative reduction in backlog to be adjusted in FY1999 estimates. To improve estimates for contracting, contract miles are now counted when awarded and not when accomplished.

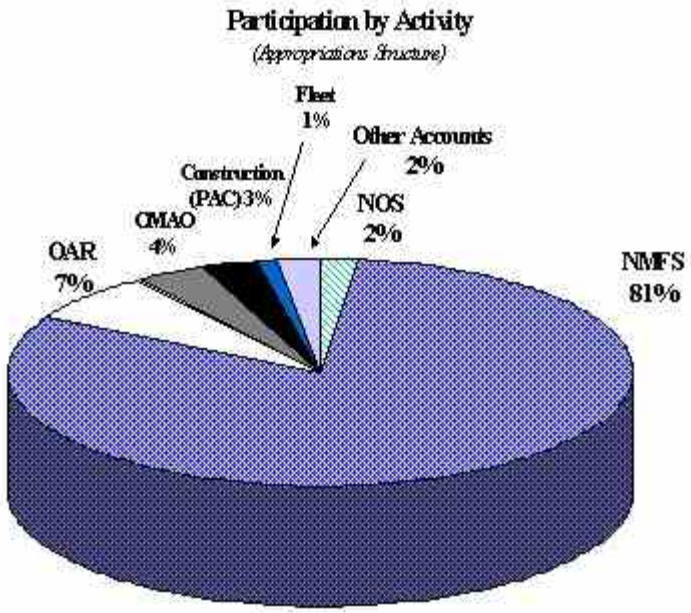
D. This performance measure has been revised to "Percent of National Water Level Observation Network modernized"(cumulative). The total number of NWLON stations changed from 175 to 172 in FY 2001.

E. The vertical component of the NSRS performance measure was expanded in FY1999 to include additional networks not previously tracked that serve to measure height modernization performance. The target base reference for Continuously Operating Reference Stations increased from 200 to 300 in FY 1999.



Build Sustainable Fisheries

Total Request: $533,778,000



Vision - NOAA's vision for the next decade is to greatly increase the Nation's wealth and quality of life through sustainable fisheries that support fishing industry jobs, provide safe and wholesome seafood, and ensure recreational fishing opportunities.

Challenge - Billions of dollars in economic growth, thousands of jobs and countless recreational fishing opportunities are not realized as a result of overfishing and overcapitalization in commercial and recreational fisheries. While many fisheries are well managed and are producing positive benefits, others are severely depleted, and must be restored to realize their long-term potential. Transboundary resources can be especially vulnerable as they require international cooperation to achieve effective conservation and management. Bycatch of non-target species, including juveniles and protected marine species, the controversial allocation decisions among elements of fishing industries, and the degradation and loss of essential fish habitat are serious problems effecting U.S. fisheries. In order to meet the growing domestic and global demand for seafood, and in light of the growing number of wild stocks that are over fished or fully utilized, it is important for the Nation to develop marine aquaculture, and to do so in an environmentally sound manner.

Implementation Strategy - The objectives of this strategic planning goal are to:

- eliminate and prevent overfishing and overcapitalization - by assessing the status of fishery resources, advancing fishery predictions, managing for economic growth in the fishing industry and ensuring adequate and voluntary compliance with fishery regulations;
- attain economic sustainability in fishing communities - by providing research and services for fishery-dependent industries and maximizing benefits from marine resources; and

- develop environmentally and economically sound marine aquaculture - by supporting aquaculture research and development and ensuring responsible industry practices.

Benefits - Rebuilding over exploited fish stocks by eliminating overfishing, protecting and improving fish habitat, and improving the economics of fisheries by reducing overcapitilization, are the key elements in a transition to sustainable fisheries. These activities will result in a more viable and competitive U.S. fishing industry, which in turn will lead to economic and social improvement in fisheries-dependent communities. Along with economic gains and the rebuilding of living marine resources, improved fisheries management and conservation will enhance recreational opportunities and save lives by eliminating the dangerous and wasteful race for the fish. By developing environmentally sound aquaculture, seafood supplies can be supplemented with high quality and reliable products without contributing to overfishing of wild populations or other negative impacts on coastal ecosystems.

FY 2000 Accomplishments

During FY 2000, NOAA continued to provide national leadership to maintain and improve the health of the Nation's fisheries. The following are the year's highlights:

NOAA continues to conduct research to advance fishery predictions, reduce costs of conventional stock assessments, develop advanced remote sensing techniques, improve fishery habitat and promote environmentally sound aquaculture. Through significant regulations (e.g., fish harvesting quotas and closures of fishery areas) NOAA has slowed and/or stopped overutilization of federally managed fisheries. In the future, progress will be focused on rebuilding stocks. Progress was made in defining and identifying possible quantitative methods of measuring fishing capacity. A preliminary report to assess capacity levels in some federally managed fisheries is being completed. These are critical steps in resolving overfishing, and improving the environmental and economic reviews to assist the decision making process.

The American Fisheries Act has been implemented dramatically restructuring of the Alaska pollock fishery. All of the necessary steps were completed in time for the start of the fishing season, resulting in a slower, more profitable harvest.

NOAA Fisheries issued regulations to implement Amendment 8 to the Northern Anchovy Fishery Management Plan (FMP) for the Exclusive Economic Zone (EEZ) off Washington, Oregon, and California. The amendment constitutes a major revamping of the FMP and implements proactive conservation measures by establishing a limited entry program to curtail anticipated increases in harvesting California sardine and Pacific mackerel.

A new monkfish management plan was approved in the Northeast and Mid-Atlantic regions which is intended to stop overfishing and rebuild the monkfish stock. This rule limits capacity, establishes catch

and effort controls, creates a framework adjustment process, and establishes permitting and reporting requirements.

By investing a new state-of-the-art- research vessels, NOAA will be able to conduct essential stock assessment surveys, better monitor fish and marine mammal species, assess ecological changes, and provide the best available data to rebuild sustainable fisheries.

NOAA has completed agreements with all 20 coastal Districts of the Army Corps of Engineers, as well as regional offices of a number of other federal regulatory and construction agencies, to provide efficient ways for agencies to consult with NOAA and minimize adverse effect of their actions on essential fish habitat (EFH). NOAA has conducted over 10,000 EFH consultations resulting in recommendations to help conserve essential fish habitats for commercially and recreationally important species.

NOAA also developed guidelines regarding aquaculture developments and began the process of developing a Code of Conduct for Responsible Marine Aquaculture.

Key FY 2002 Activities

- Improve and expand stock assessments and prediction through increased fish stock surveys, including marine mammal stock assessments.

- Implement the NMFS Stock Assessment Improvement Plan (SAIP). This plan represents an investment in science program infrastructure and key staff resources to ensure state-of-the-art assessments for core species, adequate baseline monitoring of all Federally-managed species, and remedial data collection efforts.

- Investigate basin-wide changes in atmospheric and oceanic circulation and their effects on marine populations. FATE's (Fisheries and the Environment) goal is to develop biological and physical indicators of major changes in the ocean climate regime (i.e., regime shifts) that affects fisheries and other ecosystem components.

- Continue implementation of the national fisheries information system. The proposed system would improve the accuracy and effectiveness of existing data collection programs by establishing common data collection, information technology, and quality standards for regional programs, and integrating the results into a unified Web-enabled information system.

- Initiate new economics and statistics activities in cooperation with recreational and commercial fishing participants, state fishery agencies, interstate commissions, fishery management councils, fishing communities, and regional fisheries network.

- Provide increased observer coverage in previously unobserved fisheries or increase coverage to provide improved statistical validity. This program will improve the quality of data and provide a sound basis for management decision while capitalizing on technology enhancements that will decrease costs and improve efficiency.

- Promote public and private sector aquaculture which includes funding for research to develop environmentally sound marine aquaculture.

Key Performance Measures

	1997 act.	1998 act.	1999 est.	2000 est.	2001*	2002*
% of SFA requirements met	N/A	N/A	20	40	N/A	N/A
% of stocks assessed (of 201 identified)	79	79	79	80	N/A	N/A
% completion of information technology procurement/operations	85	90	95	100	N/A	N/A
# Fishery Management Plans with access controls implemented (of 39 FMPs)	25	23	27	30	N/A	N/A
# of fleets using vessel monitoring systems for spatial/temporal regulations	3	3	5	6	N/A	N/A

* To be replaced by new measures.

Key Performance Measures (New)

	1997	1998	1999 act.	2000 act.	2001 est.	2002 est.
By 2005, 25% (86 of 279) fewer over fished fisheries (stocks subject to overfishing)	N/A	N/A	-4%	-7%	1%	6%
By 2005, 20% fewer overcapitalized fisheries (economic and social aspect)	N/A	N/A	0	1%	3%	3%
By 2005, 60% of stocks have sufficient "essential fish habitat"	N/A	N/A	N/A	10%	40%	40%
By 2005, 9% increase in employment in non-capture fishing and/or other sectors	N/A	N/A	0	1%	2%	2%
By 2005, 20% of communities impacted by limited/closed fisheries are economically improved	N/A	N/A	0	1%	3%	3%
By 2005, 17% increase in economic contribution of aquaculture to Gross Domestic Product (GDP)	N/A	N/A	0	2%	4%	4%
By 2005, 100% of aquaculture operations are in compliance with code of responsible aquaculture practice	N/A	N/A	0	N/A [A]	15%	100%

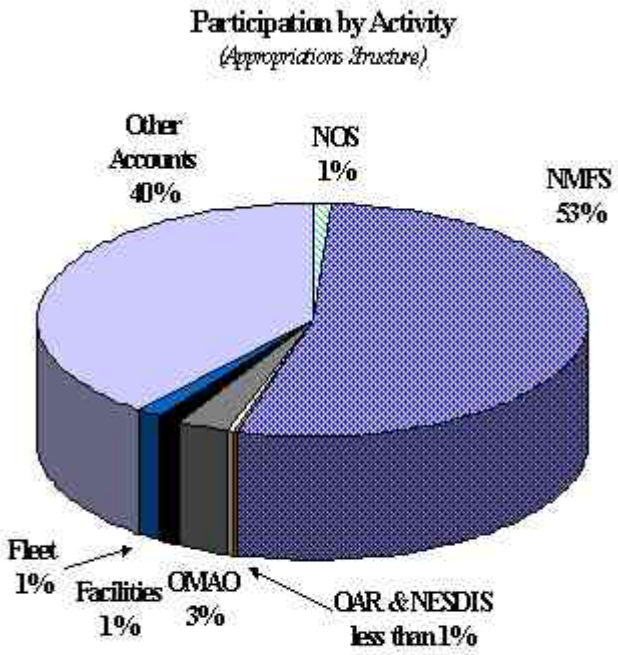
A. Although several companies applied for permits, there were no aquaculture operations in federal waters in FY 2000.

Recover Protected Species

Total Request: $280,664,000

Vision - NOAA's vision is to conserve marine species and to recover those in danger of extinction. By 2005, NOAA will be on the road to recovering every marine species at risk and maintaining the healthy marine ecosystems upon which they depend.

Challenge - Marine resources contribute billions of dollars to the Nation's economy. However, many commercial and recreational activities contribute to stress on marine species. Many populations of marine organisms are depleted or declining due to human activity in marine ecosystems and unknown causes. For example, West Coast salmon populations are at-risk due to a combination of factors including habitat loss and commercial overexploitation. Despite protective measures, fishing-related mortality continues to threaten marine turtles in the Nation's waters. Several seal and sea lion populations in Alaska are declining rapidly and the causes are uncertain. Recovery plans have been developed for the most endangered species, but implementation for others, especially for stocks of marine mammals and sea turtles, is needed. The desired outcome is to recover protected species in danger of extinction and to maintain healthy species and ecosystems, in a manner compatible with the sustainable use of marine resources.



Implementation Strategy - The objectives of this goal are to:

- reduce the probability of extinction for protected species; and
- maintain healthy species and ecosystems.

Benefits - Through conservation of the Nation's living marine resources, NOAA will enhance economic and cultural opportunities for future generations. The existence of the Marine Mammal Protection Act, the Endangered Species Act and other legislation provides a clear indication of public support for strong efforts to conserve living marine resources. This effort will enable the preservation of marine biodiversity by balancing the utilization of natural resources with the management of protected species. Recovering species, and avoiding the further decline of others, will contribute to the overall health and understanding of marine ecosystems. Improved science will lead to better long-term management and conservation strategies.

FY 2000 Accomplishments

During FY 2000, NOAA continued to improve its stewardship of marine mammals, sea turtles and other marine species, including salmon. NOAA has worked with the International Whaling Commission (IWC) to complete a status assessment for North Atlantic right whales and has also worked to prepare revised estimates of the abundance of dolphin stocks affected by the tuna purse-seine fishery. In order to determine the nesting activities of leatherback turtles, aerial surveys were conducted along the Pacific coast of Mexico.

A recovery plan for endangered fin and sei whales was completed and implemented. In addition, NOAA has worked with its regional offices and other government agencies, such as U.S. Fish and Wildlife Service and the Coast Guard, to develop policies and regulations that protect endangered or threatened species and their habitat. A final rule reducing the mesh size around Turtle Excluder Devices (TEDs) was developed by the northeast regional NMFS office for the summer flounder trawl fishery. Harvest management plans and 4(d) rules have been developed and published for several species of salmon. NOAA's Office of Protected Resources has worked with the U.S. Fish and Wildlife Service to improve the Habitat Conservation Plan (HCP) guidance. Incidental take permits issued under HCP currently cover over 2 million acres of salmon habitat. With the help of the U.S. Coast Guard, NOAA has implemented a mandatory ship reporting system to prevent ship strikes with endangered northern right whales and has instituted regulations on humpback whale-watching activities in Alaska.

During FY 2000, NOAA evaluated and reported on fisheries impacts to marine mammals. NOAA's Observer Program assessed Cook Inlet beluga mortality incidental to the Cook Inlet salmon driftnet fishery, monitored marine mammal takes by the U.S. Navy during low frequency active sonar systems deployments, evaluated the extent to which subsistence harvest of whales is affecting stock recovery, and determined the level of incidental marine mammal take in California gillnet fisheries. NOAA also completed bycatch estimates for North Atlantic sea turtles and published a paper on mitigation of seabird bycatch in relation to the Hawaii-based swordfish longline fishery.

NOAA completed several activities to protect and restore priority diversity areas. Marine debris was removed from coral reefs at Lisianski Island, Northwestern Hawaiian Islands. Creek restoration projects, installation of fish passages and screens on power plants, and the development of analytical recovery models have all been implemented by NOAA to reduce salmonid mortality on the west coast. Species-habitat baseline surveys were conducted in the Tortugas region of Florida to assess the role of coral reef Essential Fish Habitat (EFH) in juvenile and adult reef fish abundance.

Other FY 2000 accomplishments for NOAA's RPS strategic planning team include the institutionalization and enforcement of the Community Oriented Policing and Problem Solving (COPPS) program, which has helped to reduce the number and risk of incidental and direct takes of marine mammals, and has enhanced communication and coordination with tribal groups over subsistence harvest of whales. The International Dolphin Conservation Program Act and the Cooperative Agreement component of the Northern Fur Seal Conservation Plan were both implemented in FY 2000. NOAA represented the U.S. position at the 11th Conference of the Convention on International Trade in Endangered Species (CITES). NOAA also designated critical habitat for numerous stocks of salmon, provided technical assistance to non-federal land managers to develop HCPs, and implemented the Timber/Fish/Wildlife Agreement in Washington. In addition, NOAA reduced the competition between the Alaskan pollock fishery and Stellar sea lions.

FY 2002 Key Activities

The RPS program proposes to restore and sustain the stream of economic, scientific and environmental benefits from the oceans to the American public, as well as other nations. This will be accomplished by focusing on the conservation and recovery of several key marine and anadromous species that serve as indicators of environmental health as well as supporting key economic activities (fisheries and recreation). They are a call for NOAA to act using its scientific and management expertise in cooperation with domestic and international partners.

This initiative focuses NOAA's effort on both the crisis of several species that are on the brink of extinction, and for which we must urgently stem the declines and begin recovery, and on the continued conservation of species that are determined to be at risk or even healthy, but which are threatened by various human activities. The initiative targets species across the marine oceanscape both domestically and internationally. This will be done through a combination of research, monitoring and management actions to determine the causes for the decline and to implement recovery measures.

. Key activities and initiatives include:

Conservation and Recovery of Protected Marine Species

- **Sea turtle conservation and recovery** - Atlantic and Pacific sea turtles are experiencing serious decline and extinction projections within this century. NOAA will gather the information on the

risks these stocks face from fishing operations and other activities, both domestically and internationally, and mitigate those risks as well as monitor trends in species status. These activities are vital to promote marine turtle recovery and avoid restrictions to economic activities that are impacting them.

- **Bottlenose dolphin conservation and recovery** - NOAA will expand current activities in stock identification and assessment, to reduce mortality incidental to commercial fishing activities, and to initiate efforts to use bottlenose dolphins as an indicator of the health of the ecosystems they occupy.

- **Northern right whales** - NOAA will expand current population, monitoring and health assessments and recovery efforts in the North Atlantic and in the North Pacific.

- **Atlantic Salmon Recovery** - The Gulf of Maine Atlantic salmon was listed as endangered in 2000. Once ranging from the Housatonic River in Connecticut to the Canadian border, naturally spawning populations are now restricted to fewer than 20 streams in mid-coast and Downeast Maine area. NOAA will conserve and restore healthy populations of Atlantic and the habitats upon which they depend to provide a surplus for recreational and native people's fisheries consistent with existing laws.

- **Enforcement of conservation measures for protected resources** - NOAA will support two permanent Protected Resources Enforcement Team to enforce Turtle Excluder Device regulations, to educate shrimpers on the maintenance and use of the devices, and to provide additional related problem solving and intervention strategies to protect sea turtles.

- **Pacific salmon recovery** - Pacific salmonids, which have long been integral to the culture and economy of the Pacific Northwest, have declined dramatically over the past century due to the combined effects of habitat destruction; hydropower operations; poor land-use, transportation and water-resource decisions; harvest and hatchery impacts; increased predators; and poor environmental conditions. NOAA will implement the Pacific Coastal Salmon Recovery Fund provide support to the broad array of state, tribal, local governments and private entities that are involved in collaborative salmon conservation efforts in this vast area.

- **Marine Protected Areas Program** - NOAA will strengthen and improve agency-wide Marine Protected Areas (MPA) programs and their conservation goals. NOAA will foster collaboration with the Department of Interior and other Federal agencies, state, local, tribal, and territorial governments as well as non-governmental partners.

Key Performance Measures

	1997 act.	1998 act.	1999 act.	2000 act.	2001 est.	2002 est.
By FY 2006, reduce the probability of extinction of 5 threatened species[1]/ESUs out of 23 threatened species/ESUs: (annual)	na	na	na	na	2	2
By FY 2006, reduce the probability of extinction of 7 candidate species[1]/ESUs out of 23 candidate species/ESUs: (annual)	na	na	na	na	1	2
By FY 2006 mortality of strategic marine mammal stocks incidental to commercial fishing operations in six fisheries will be at insignificant levels (cumulative)	na	na	na	na	2	6
# recovery plans developed (cum)	10	20	24	27	27	29
# recovery plan priority activities implemented (annual)	8	8	15	20	22	25
# species with population status improved (annual)	12	23	15	16	17	20
# status reviews used to establish and evaluate conservation programs (annual)	11	18	11	13	15	17
# investigation on mortality of protected species (annual)	7	10	10	15	16	20
# cooperative conservation programs implemented (cum)	4	10	10	10	10	10

The RPS budget proposal is based in part on measuring our ability to reduce the probability of extinction for at risk-species. RPS performance will be measured by the results of our attempts to reduce the risk of extinction for protected species from detrimental human activities, e.g., reducing incidental and direct takes, increasing species habitat, decreasing negative interactions, and mitigating natural phenomena.

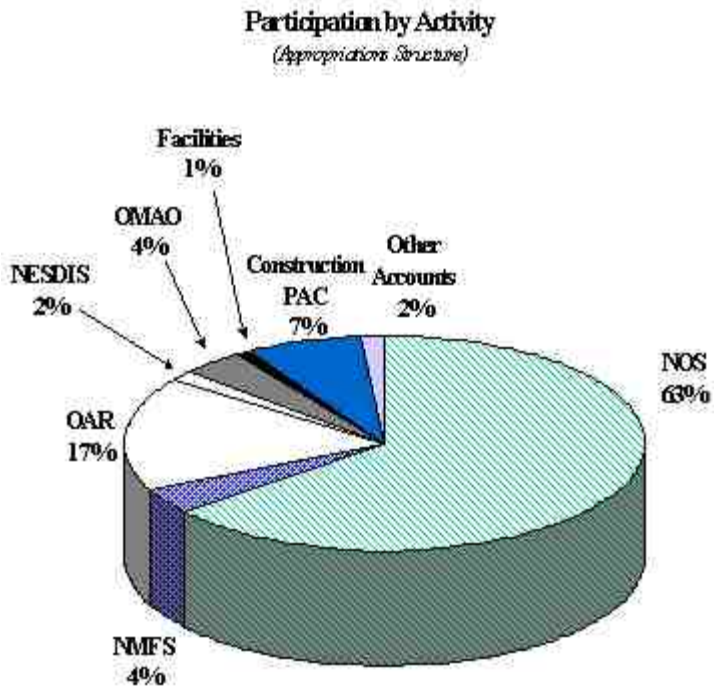
Fagatele Bay National Marine Sanctuary

Sustain Healthy Coasts

Total Request: $390,046,000

Vision - By 2005, the Nation's coasts will have more productive and diverse habitats for fish and wildlife, and cleaner coastal waters for recreation and the production of seafood. Coastal communities will have thriving, sustainable economies based on well-planned development and healthy coastal ecosystems.

Challenge - Despite progress in developing technology, information and management tools to protect and sustainably use coastal resources, rapid population growth and increasing demands continue to degrade coastal resources and threaten the economic productivity and environmental services of coastal areas. Although these areas comprise only 10 % of U.S. land area, over half of the U.S. population lives on or near the coast, and coastal populations are growing faster than most inland areas. There are many signs that additional efforts are needed to protect the economic and environmental values of U.S. oceans and coasts. In 1998, for example, about one third of 1,062 beaches reporting had at least one advisory or closing, up from 26% in 1997. Polluted runoff and degraded water quality continues to close or restrict the use of nearly 31 % of U.S. shellfish growing waters, and declines in environmental quality continue to threaten coastal communities, businesses, and human health.



Healthy coastal environments support tourism, recreation, fishing and other industries that generate more than $100 billion annually in coastal communities across the Nation. Coastal wetlands, estuaries, coral reefs and other areas provide essential feeding and nursery habitats for approximately 70 percent of all U.S. commercial and recreational fisheries species. Maintaining the health, productivity and biodiversity of coastal ecosystems is challenging, but essential to sustainable development of coastal economies and the future welfare of the Nation.

Implementation Strategy - The goal of Sustain Healthy Coasts encompasses the following objectives:

- Protect, conserve and restore coastal habitats and their biodiversity.
- Promote clean coastal waters to sustain living marine resources and ensure safe recreation, healthy seafood, and economic vitality.
- Foster well-planned and revitalized coastal communities that sustain coastal economies, are compatible with the natural environment, minimize the risks from nature's hazards, and provide access to coastal resources for the public's use and enjoyment.

Benefits - The pursuit of this goal provides information, technology, solutions, and other valuable tools to coastal resource managers at local, state, tribal and Federal levels. NOAA's coastal activities form an integrated suite of monitoring, research, assessment, restoration, information dissemination and resource management programs that enable sound decision making and sustainable development of coastal areas. Federal-state partnerships such as the Coastal Zone Management Program, National Estuarine Research Reserve System, and National Sea Grant College Program are essential components of the Sustain Healthy Coasts goal. Research provides improved understanding of the way in which coastal ecosystems function, increasing our ability to predict how they respond to changes. The ability to predict change and determine its causes empowers managers and stakeholders to work together to promote sustainable use of coastal resources and mitigate costly damages. NOAA's coastal programs effectively ensure that the Nation's coastal ecosystems are managed for the long-term benefit of the public.

FY 2000 Accomplishments

Maintaining the health, productivity and biodiversity of coastal ecosystems is essential to sustainable coastal economies. It is also critical to the future welfare of the Nation. Through the Sustain Healthy Coasts goal, NOAA addresses the practical needs and concerns of coastal resource managers, provides the science and technology for improving coastal resource management, and helps communities and other partners implement sound and effective ocean and coastal stewardship. These accomplishments are primarily realized through the efforts of the National Ocean Service, the National Marine Fisheries Service, the National Environmental Satellite, Data and Information Service, and the Office of Oceanic and Atmospheric Research. Accomplishments in FY 2000 include:

- NOAA responded to calls for scientific assistance on more than 122 incidents and spills of toxic materials into the Nation's coastal waters. NOAA's Hazardous Materials and Disaster Response teams provided on-site scientific support to other Federal and state agencies, and NOAA's Damage Assessment and Restoration Program evaluated and screened spills to determine whether to initiate damage assessment activities.

- NOAA and other natural resource trustees removed vessel structures of nine fishing vessels that grounded on the coral reefs of Pago Pago Harbor, American Samoa in 1991. The restoration completely removed the vessels and associated debris to allow natural recovery of about 30,000 square feet of submerged bottom that has been under the grounded vessels.

- In FY 2000, NOAA resolved 6 cases to recover funds for restoration of coastal resources injured by releases of oil or other hazardous materials. This included a significant settlement for the 1996 *North Cape* oil spill off the coast of Rhode Island, wherein 1.24 million lobsters will be restocked and $8 million will be provided to restore other natural resources, as well as $1.2 million for the September 1996 spill of approximately 200,000 gallons of oil into the Fore River when the M/T *Julie N* collided with a bridge near Portland, Maine.

- NOAA has given full approval to three state Coastal Nonpoint Pollution Control Program: Maryland, Rhode Island and California. This accomplishment supports NOAA's implementation of the Clean Water Action Plan.

- NOAA supported dozens of projects and partnerships to restore damaged coastal habitats. For example, the Delta Wide Crevasse project constructed 17 new artificial crevasses to foster and create 2,400 acres of natural wetlands along the Mississippi River. In Louisiana, the Lake Chapeau restoration project created 160 acres of wetlands by placing sediments dredged from Atchafalaya Bay into the fragmented marshes. NOAA also commenced construction of three habitat restoration projects in Commencement Bay, WA to benefit commercial and recreational fish species found in Puget Sound.

- NOAA established the Coastal Data Development Center at Bay St. Louis, Mississippi. The NCDDC will be a National Center that provides for archive of, and access to, the long-term coastal data record. NCDDC will work closely with many of the Federal/state/local agencies, academic institutions, and the private sector to create a unified, long-term archive for coastal data sets.

The health of our Nation's coasts depends on protecting and restoring marine habitats, improving coastal water quality, and building sustainable coastal communities. NOAA provides the science, information, technology, management and training to make progress on these objectives. The SHC performance measures and accomplishments help illustrate NOAA's progress, but they also show the work that still needs to be done. For more information about NOAA's performance in sustaining healthy coasts, please see the Appendix.

Key FY 2002 Activities

While significant progress has been made, water pollution continues to be the number one threat to healthy coastal ecosystems. Reducing runoff pollution and addressing new classes of contaminants that may degrade living marine resources and threaten human health are major concerns that will extend into the new century.

Because harmful algal blooms are increasing in frequency and duration and have been linked to approximately $1 billion in losses in the past two decades, predicting and reducing hypoxia and harmful algal blooms will be another priority in the 21st century. In addition, preventing and controlling introductions of invasive alien species will be essential to protect the fisheries and other native species that support coastal communities and economies.

Additional priorities will include reducing the effects of natural hazards; conserving and sustaining coral reefs, and exploring the ocean frontier. The new century will bring us face-to-face with growing concerns about food, security, energy, and environmental and economic health. Solutions to many of these concerns may be found in the ocean–and most of it has yet to be explored.

In FY 2002, funding will be invested in increasing the productivity and diversity of fish and wildlife habitats, providing clean coastal waters, initiating a program to reduce the impacts of coastal storms, and expanding our exploration of the ocean world.

Enhance NMS Support, Research and Exploration

New funding for the National Marine Sanctuary System (NMSS) will improve and enhance the operating and technical capacity in the thirteen national marine sanctuaries, improving protection of important sanctuary resources, including coral reefs, endangered marine mammals, sensitive habitats, and significant cultural resources.

Implementation of management changes identified through the revisions of sanctuary specific management plans will begin. These management changes are expected to be in a wide range of activities ranging from drafting and implementing new regulations, establishing new partnerships, additional outreach and education efforts, resources inventories, and additional research, monitoring and restoration. Enhancement of the Thunder Bay sanctuary will be a major effort in FY 2002. Sustainable Seas Expeditions (SSE) explore and conduct research in deep water habitats in NOAA's National Marine Sanctuaries. Funds will be used to purchase charter ship time and NOAA in-house vessel days-at-sea in support of basic Sanctuary research and monitoring efforts, as well as the Sustainable Seas Expeditions vessel requirements.

Restoration

New funding will strengthen the capabilities of NOAA and its partners to protect and restore coastal resources under the Oil Pollution Act and CERCLA (Superfund), and improve NOAA's prevention and response capabilities. Investments will increase our understanding of the effects of spill response measures, facilitating the development of improved methods and approaches for faster recovery of the injured resources

NOAA will also expand efforts to protect coastal resources from damage caused by releases of oil and other hazardous materials. Enhanced efforts will be undertaken at Superfund sites, industrial facilities, Federal facilities, brownfields, and state-lead sites, resulting in greater protection and restoration of coastal habitats and species.

Estuary Act Monitoring

The Estuary Restoration Act of 2000, passed in November 2000, establishing a new direction for coastal habitat restoration projects in the U.S. and its territories. New funding will support agency activities mandated by the legislation, including the development of scientifically sound monitoring protocols and standards for coastal habitat restoration projects throughout the United States and its protectorates. NOAA will develop restoration databases that provide quick and easy access to information on all projects funded under the Estuary Restoration Act of 2000, as well as other projects that meet specified standards for monitoring and data collection.

SHC Habitat

New funding will enable continued assistance to coastal states in the development, implementation and improvement of state and territorial coastal management programs and National Estuarine Research Reserves. The increase will allow NOAA to address the increasing requests of 33 states for support and technical assistance. It will also maintain support for and synthesize information generated by the 25 existing and 2 proposed National Estuarine Research Reserves.

New funding will enhance the monitoring and training programs at designated National Estuarine Reserve Reserves, and ultimately lead to healthier estuaries, coastal water quality, and fisheries. NOAA and state reserve staff will continue to enhance and build the System-Wide Monitoring Program (SWMP). These funding increases will enable the NERRS to expand its water quality monitoring within certain estuaries to gain a more complete understanding of spatial variation in estuarine conditions. The NERRS coastal training programs will focus on water quality, habitat, invasive species, and sustainable ecosystem issues.

Adaptive Habitat Characterization (improved methods): NOAA will lead development and implementation of advanced capabilities and specialized services to meet NOAA mission requirements for improved mapping and spatial analysis products that characterize the structure and function of coastal habitats.

Coastal Storms

NOAA will initiate efforts to integrate its capabilities to predict and reduce the watershed impacts of coastal storms. New funding will allow NOAA to survey the first Coastal Storms Initiative pilot region in Florida and acquire up-to-date shallow water bathymetry for use in topographic-bathymetric projects. Funding will also support estuarine, coastal and lake modeling and forecasting. These funds will allow for the development of a hydrodynamic model for the St. John's River, Florida. This component complements Coastal Storms increasesrequested under the Promote Safe Navigation goal.

Coral Reef Monitoring

To support coral reef monitoring, NOAA will continue to build on existing programs that identify potentially harmful naturally occurring events, such as bleaching. Improved remote sensing products and data from in-situ monitoring devices will be more accessible through improved computing power and Internet capabilities to users worldwide. International, inter-agency and cross LO collaborations will continue to develop to more effectively monitor coral reefs in crisis.

Ocean Exploration

As part of the Ocean Exploration initiative, frontier expeditions are planned for the Northeastern Pacific, the Arctic, the Gulf of Mexico and the Hudson Canyon. Proposed actions include: finding new resources in the U.S. EEZ and continental margins, exploring natural sounds through ocean acoustics, exploring America's maritime heritage and technologies to support exploration.

Invasive Species

In support of the National Invasive Species Act, NOAA will continue to address aquatic nuisance species issues in marine and coastal areas. Solutions will be sought to eradicate invasive species from commercial carriers that transport these exotics either in their ballast water or in the infested sediment remaining in their empty ballast tanks.

Creating Value from the Sea

As part of the National Sea Grant College Program Act, NOAA will carry out its mandate to increase the development, utilization and conservation of the Nation's ocean, coastal and Great Lakes resources. Under this mandate NOAA will create value from the sea by advancing our understanding of marine organisms in order to identify and develop products and study processes which have the potential to improve human health as well as address some marine environmental issues.

Key Performance Measures

	1997 act.	1998 act.	1999 act.	2000 act.	2001 est.	2002 est.
Protection/Restoration of coastal habitas (cum):						
# Acres benefitted			81,000	115,000	119,000	122,000
# Damage cases settled	26	30	37	41	45	
# Interagency restoration projects	16	20	25	30	55	
# Coastal regions with adequate measures to prevent and control aquatic invasive species (Total 6 U.S. regions)				1	2	2
Completion of Coastal protection systems						
% State Coastal Nonpoint Pollution Programs	74	83	83	86	89	89
conditionally approved (% of 35 states)	0	0	0.3	0.6	2.2	2.2
% Coastal watersheds with coastal zone management measures to reduce polluted runoff (% of 1920 total watersheds)	89	91	94	94	97	97
% State Coastal Zone Management Programs completed (% of 35 States)	10	10	20	31	45	69
% National Estuarine Research Reserves with upgraded capabilities	8	17	25	33	50	69
% National Marine Sanctuaries at baseline operational level						
% of 40 Key U.S. Coastal Ecosystems with:						
Reduced risks from hazardous chemicals	15	20	32	37	42	52
Assessments of water quality and natural resources	23	25	28	30	33	33
Assessment of levels and effects of toxic contaminations	20	25	28	30	32	32